Drivers of cycling demand and cycling futures in the Danish context.

Nielsen, Thomas Alexander Sick; Christiansen, Hjalmar; Jensen, Carsten; Skougaard, Britt Zoëga

Publication date:
2014

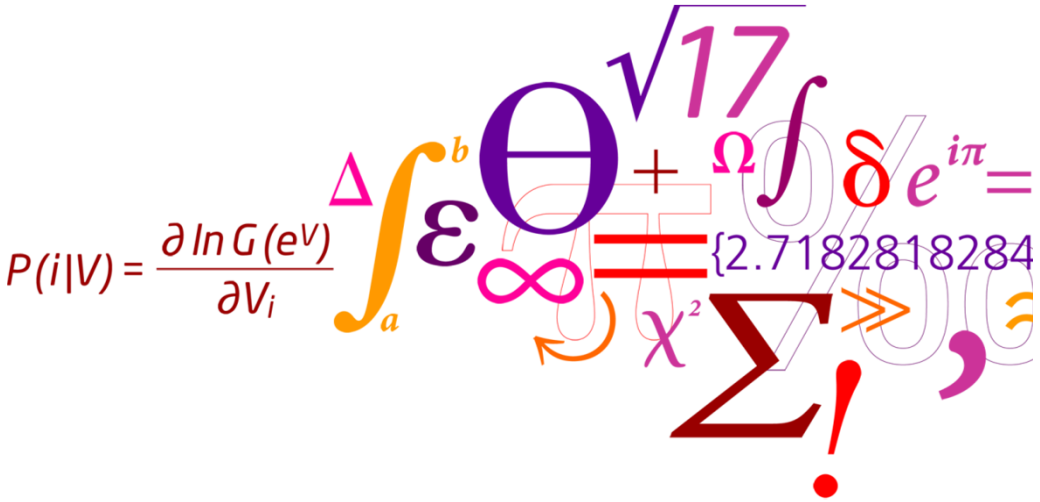
Document Version
Peer reviewed version

Cosmobilities Conference, Networked Urban Mobilities;
November 5-7 2014, Copenhagen

Drivers of cycling demand and cycling futures in the Danish context.

Thomas Sick Nielsen
Hjalmar Christiansen
Carsten Jensen
Britt Zoëga Skougaard

E: thnie@transport.dtu.dk



DTU Transport
Institut for Transport

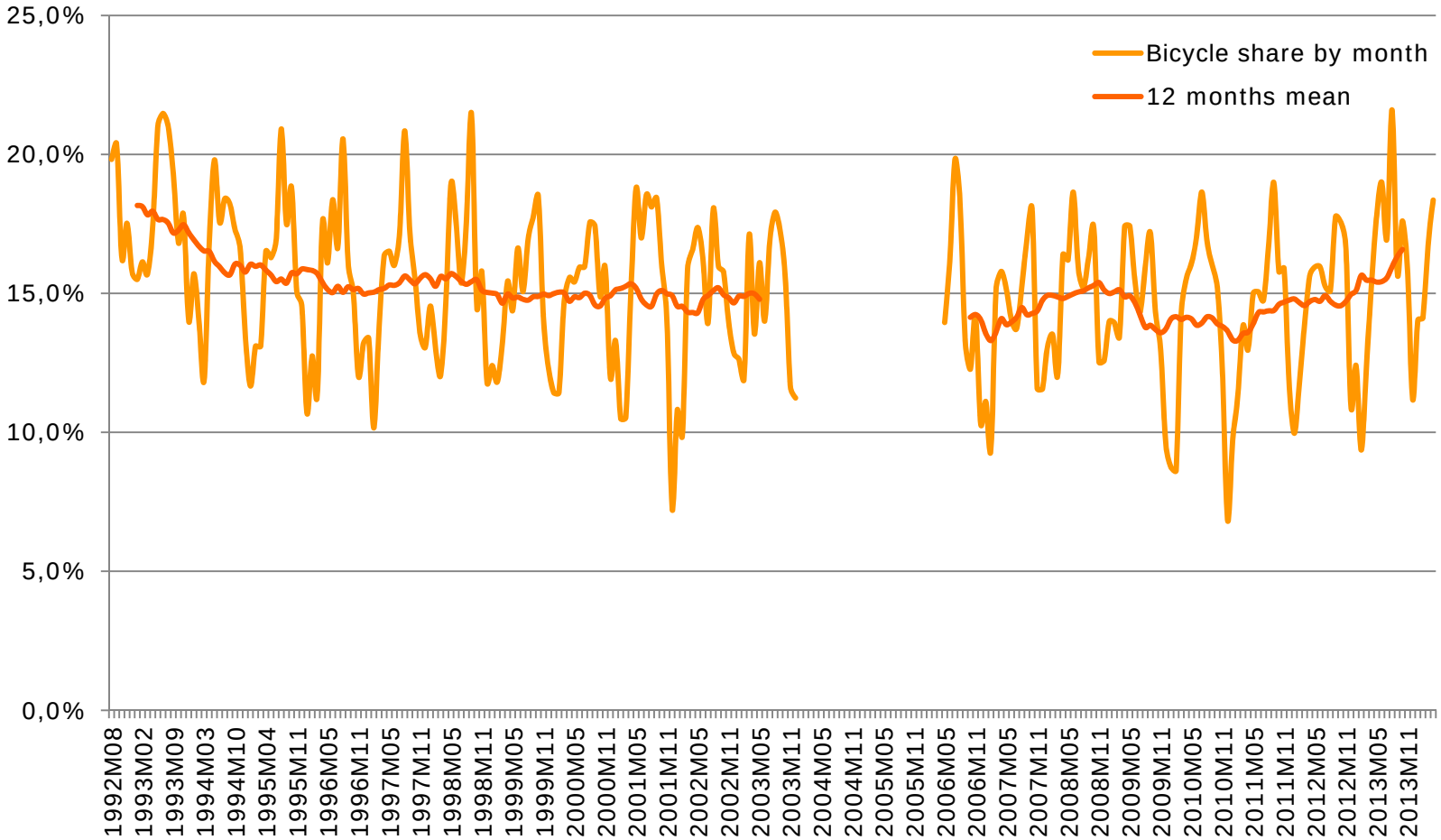
Approach

- Analysis of the time trend in cycling mode share based on longest possible time series
- Logistic regression model of cycling as mode choice as basis for studying ‘driver variables’ contribution to time trend.
- Describing important vectors of change behind the time trend

Data

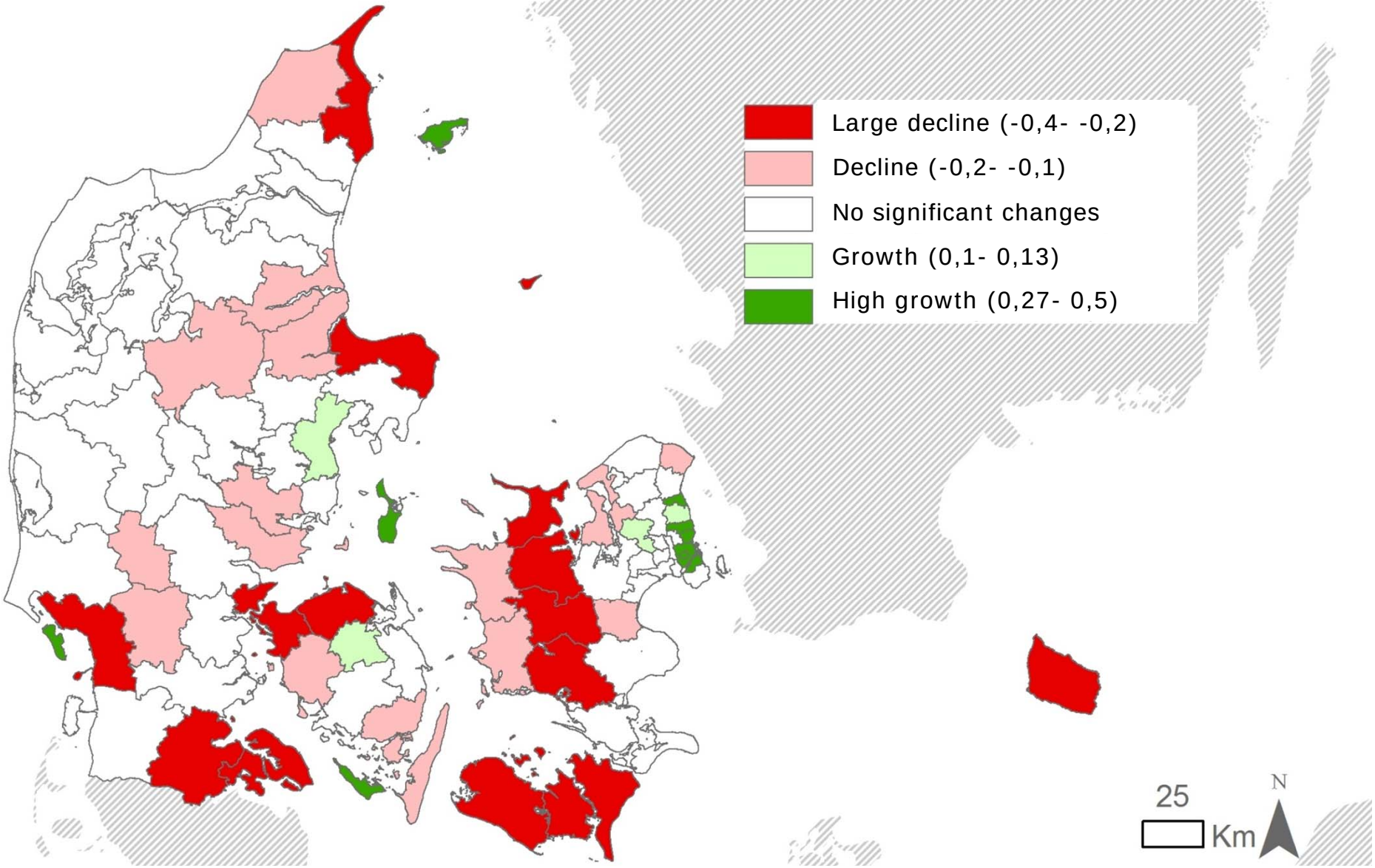
- Danish National Travel Survey (TU)
- Two survey periods: 1992-2003 & 2006-2014
- One day of travel for 10000 Danish resident individuals per survey year
- Some breaks in dataseries and variables over time
- Analysis in this presentation is mainly based on 1995-2014 and respondents age 16-74 (N=654203 trips) for comparability and availability of explanatory variables.
- Variables available for 1995-2014 include: age, gender, occupation, accomodation, home ownership, family type, drivers license and car ownership.
- An indicator of spatial integration/regionalisation is developed based on survey average trip lenghts by municipality and year (endogenity issue!).

Trend: cycling mode share 1992-2014*



* Source: National Travel survey (TU), cycling mode share of all trips by 16-74 year olds living in Denmark, N=747633 trips

Trend in bicycle share by municipality 1995-2013



Correlation and driver changes 1995-2013

	Correlation with cycling	Change in driver 1995-2013	
Winter	Less likely to bicycle in winter (Dec, Jan, Feb)	**No**	
Gender	Women are more likely to cycle	no	
Occupation	Students and pupils more likely to cycle; self employed less	More students and retirees; fewer housewives	+ / -
Accomodation	Multi story dwellings linked to cycling; farm houses link to less cycling	New dwelling types (dormitories etc.)	+ / -
Home ownership	Renters and shared owners more likely to cycle	Fewer renters	+ / -
Family type	Couples less likely to cycle than singles	More singles, fewer couples with children	+
Age cohorts	Older cohorts are more likely to cycle (exception is the oldest 1918-1930 cohort)	General shift from older to younger cohorts (ageing)	-
City size (population)	Residents of large cities are more likely to cycle	Average city size is increasing (13%) (migration)	+
Population density	Residents of dense municipalities are more likely to cycle	Average density is increasing (6%) (migration)	+
Drivers license	License holders are less likely to bicycle	Growth in licenseholding (7%)	-
Car in household	Car owners are less likely to bicycle	Growth in carownership (8%)	-
Trip lenghts (municipality)	Long average triplenghts makes it less likely to bicycle	Strong growth in average triplenghts (31%)	-

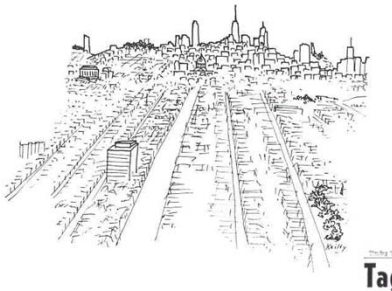
Main change processes

Demographic and socioeconomic change

Occupation, accomodation, home ownership, familily type and age cohorte

Urbanisation

Population size and density



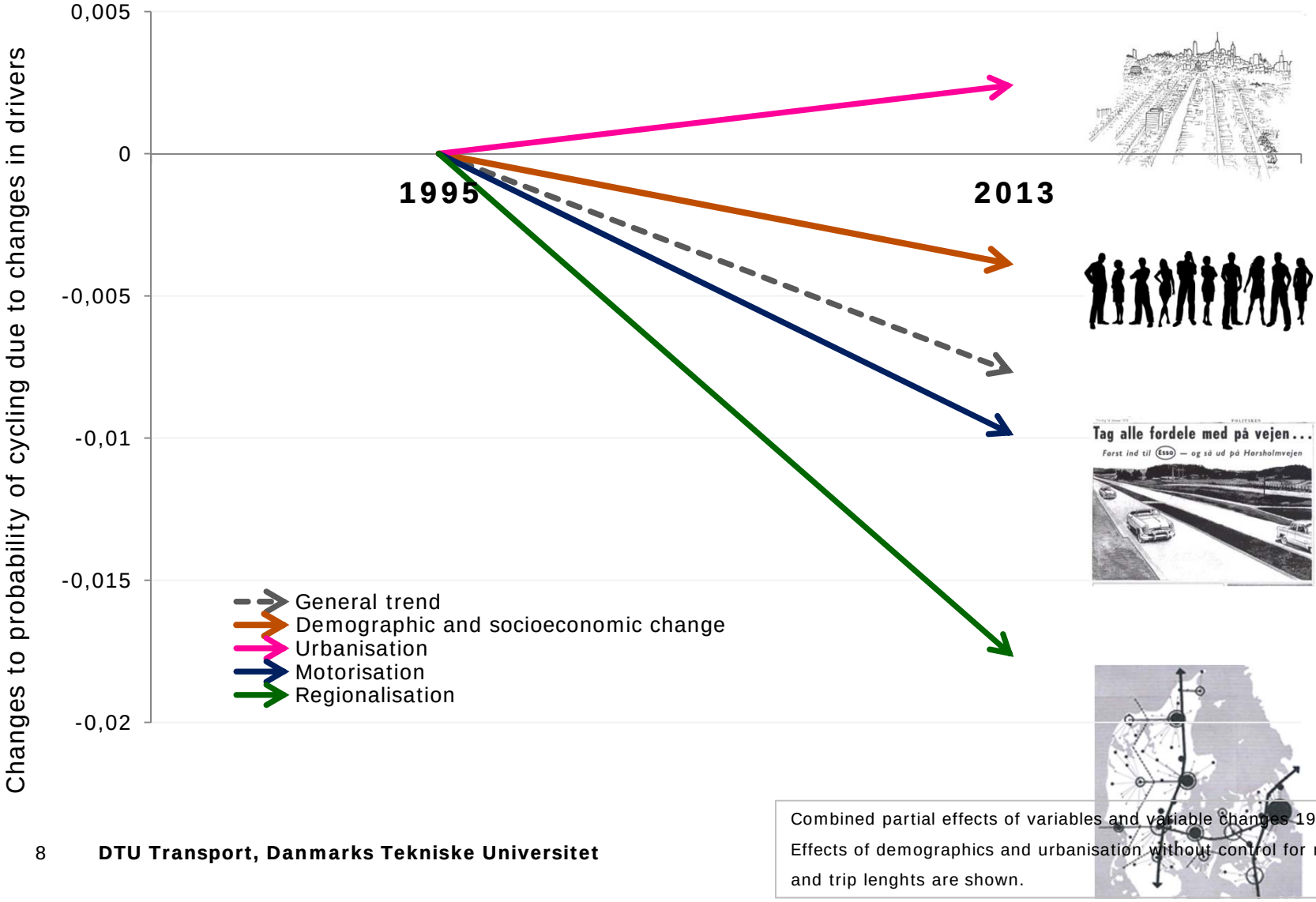
Motorisation

Drivers license and car ownership

Regionalisation

Average trip lenghts for residents of municpalities

Vectors of change in cycling share 1995-2013



Combined partial effects of variables and variable changes 1995-2013. Effects of demographics and urbanisation without control for motorisation and trip lenghts are shown.

Summary

- Cycling mode share in Denmark has seen a negative time trend between 1995 and 2013.
- There are substantial trend differences between cities, their hinterlands og more remote areas. From large increases over large declines, to status-quo.
- The negative time trend may be partially explained by a combination of unfavorable demographic and socio-economic changes.
- Changes to car access (motorisation) and trip lenghts (regionalisation) can account for the rest – and more so.
- The ongoing urbanisation makes a positive contribution to cycling – but only partially counterbalances the negative influence of other changes.
- Especially the increasing regionalisation where commuting, shopping etc. increasingly involve ‘interurban’ travel stands out as a major challenge to cycling modeshare.

There is much more work to do...

- Inclusion of additional variables such as income. (comparability issues to be solved)

- Analysis of change in recent years (2006-2014) will allow better modelling - and fuller elaboration of change vectors.

- Narrowing of ‘time window’ for analysis pust requirements of explicit treatment of weather (e.g. long and cold winters) as well as specific events and incidences e.g. the role of the financial crisis for the trends after 2006/7.

- Elaboration of processes of regionalisation and increasing trip lenghts. Notably the interaction between urbanisation and regionalisation processes.

- Elaboration of trend variation by geographical context – and exchange between cycling and walking modes.